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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
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09/577,932 05/25/00 MARUYAMA

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ARMSTRONG, WESTERMAN, HATTORI,
MCLELAND & NAUGHTON, LLP
1725 K STREET, NW, SUITE 1000
WASHINGTON DC 20006

EXAMINER

CHU, C

ART UNIT

PAPER NUMBER

2815

DATE MAILED:

09/21/01

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

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Office Action Summary

Application No.

09/577,932

Applicant(s)

MARUYAMA ET AL.

Examiner

Chris C. Chu

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 August 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 - 13 is/are pending in the application.
- 4a) Of the above claim(s) 6 - 12 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 - 5 and 13 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 25 May 2000 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 5.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

1. Applicant's election without traverse of Group I, claims 1 – 5 and 13, in Paper No. 4 is acknowledged.

Drawings

2. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference character "94a" has been used to designate both holes and a porous plate. Correction is required.
3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference sign(s) not mentioned in the description: on page 38, line 25 of the specification refers to a porous plate "94" which is not referenced in the figures. Correction is required.
4. Applicant is required to submit a proposed drawing correction in reply to this Office action. However, formal correction of the noted defect can be deferred until the application is allowed by the examiner.

Specification

5. The disclosure is objected to because of the following informalities: on page 24, line 27 of the specification “the redistribution layer 36” should be --the redistribution layer 34--, because the reference number “36” refers electrode pads.

Appropriate correction is required.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

7. Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Dasse et al.

Note Fig. 3 of Dasse et al., where the reference shows a semiconductor device comprising: a semiconductor element (28) having a plurality of electrodes (see Fig. 3); a redistribution layer (see Fig. 4 and read column 28, lines 7 ~ 16) which connects the electrodes of the semiconductor device to electrode pads located in predetermined positions of the redistribution layer; a plurality of metal posts (88 in Fig. 5) formed on the electrode pads of the redistribution layer (see fig. 5), the metal posts being configured to be provided with external connection electrodes; at least one mark member (68 in Fig. 3) which serves as an alignment mark located in a predetermined positional relationship with the metal posts (see fig. 3), wherein

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the mark member is made of the same material as the metal posts. Further, the phrases “the metal posts being configured to be provided with external connection electrodes” and “the mark member is made of the same material as the metal posts” are structure inherent in Dasse et al.

8. Claim 13 is rejected under 35 U.S.C. 102(e) as being anticipated by Ishikawa et al.

Note Fig. 3 of Ishikawa et al., where the reference shows an apparatus for fixing a semiconductor wafer (26) by suction (see Fig. 3), comprising: a vacuum chuck table (48 in Fig. 1) having a plurality of concentric suction grooves (78 A ~ 78D); and suction passages (80A ~ 80D) connected to the suction grooves (see Fig. 3), the suction grooves (78A ~ 78D) being grouped into a plurality of groups so that each of the suction passages is connected to the suction grooves included in a corresponding one of the groups (see Fig. 3 and Fig. 4), wherein a suctioning force is sequentially introduced into the suction passages at different timing. Further, as to the language on lines 10 ~ 12 of claim 13, “wherein a suctioning force is sequentially introduced into the suction passages at different timing”, even though product-by-process claims are limited by and defined by the process, determination of patentability is based upon the product itself. The patentability of a product does not depend on its method of production. If the product in product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product is made by a different process. In re Thorpe, 227 USPQ 964, 966 (Fed. Cir. 1985) (citations omitted). A “product by process” claim is directed to the product per se, no matter how actually made, In re Hirao, **190 USPQ 15 at 17** (footnote 3). See also In re Brown, **173 USPQ 685**; In re Luck, **177 USPQ 523**; In re Fessmann, **180 USPQ 324**; In re Avery, **186 USPQ 116**; In re Wertheim, **191 USPQ 90 (209 USPQ 254**

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does not deal with this issue); and In re Marosi et al., **218 USPQ 289** final product per se which must be determined in a “product by, all of” claim, and not the patentability of the process, and that an old or obvious product, whether claimed in “product by process” claims or not. Note that Applicant has the burden of proof in such cases, as the above caselaw makes clear.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 1 ~ 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shibata in view of Nara et al.

Note Fig. 12 of Shibata, where the reference shows a semiconductor device comprising: a semiconductor element (1) having a plurality of electrodes (5); a redistribution layer (6 and 8) which connects the electrodes of the semiconductor device to electrode pads (7) located in predetermined positions of the redistribution layer (see Fig. 12); a plurality of metal posts (9) formed on the electrode pads (7) of the redistribution layer (6 and 8), the metal posts (9) being configured to be provided with external connection electrodes (see Fig. 12) except at least one mark member which serves as an alignment mark located in a predetermined positional relationship with the metal posts, wherein the mark member is made of the same material as the metal posts. However, Nara et al. discloses at least one mark member (22a in Fig. 1), which

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serves as an alignment mark on a bump or pad. Thus, it would have been obvious to one of ordinary skill in the art at the time when the invention was made to modify Shibata by adding an alignment mark on the metal post so that at least one metal post, which serves as a mark member located in a predetermined positional relationship with other metal posts as taught by Nara et al. The ordinary artisan would have been motivated to modify Shibata in the manner described above for at least the purpose of decreasing the time for scanning and forming the alignment mark (column 3, lines 4 ~ 7).

Regarding claims 2 and 5, Shibata in view of Nara et al. discloses the alignment mark (22a) has an outer configuration other than a circle (see Fig. 5A of Schwartz et al.).

Regarding claim 3, as to the language on lines 2 ~ 5 of claim 3, “a width of the alignment mark measured along a plane parallel to a surface of the redistribution layer is greater than a height of the metal posts”, applicant should note that this is merely “result or function” language which cannot be relied upon to define over Shibata in view of Nara et al., since Shibata in view of Nara et al. discloses all of the claimed elements and their recited relationships. Moreover, the examiner will presume that the recited results are inherent in Shibata in view of Nara et al., since all of the claimed elements and the relationships therebetween are met by Shibata in view of Nara et al. If the recited result or function is not inherent in Shibata in view of Nara et al., then this would mean that applicant has failed to recite one or more critical features of the present invention (i.e., a problem under 112, first paragraph).

Regarding claim 4, note Fig. 10 of Shibata, where the reference shows a semiconductor device comprising: a semiconductor element (1) having a plurality of electrodes (5); a redistribution layer (6 and 8) which connects the electrodes (5) of the semiconductor device to

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electrode pads (7) located in predetermined positions of the redistribution layer (see Fig. 10) except at least one mark member which serves as an alignment mark located in a predetermined positional relationship with the electrode pads, wherein the mark member is made of the same material with the electrode pads. However, Nara et al. discloses at least one mark member (22a in Fig. 1), which serves as an alignment mark on a bump or pad. Thus, it would have been obvious to one of ordinary skill in the art at the time when the invention was made to modify Shibata by adding an alignment mark on the pad so that at least one pad, which serves as a mark member located in a predetermined positional relationship with other electrode pads as taught by Nara et al. The ordinary artisan would have been motivated to modify Shibata in the manner described above for at least the purpose of decreasing the time for scanning and forming the alignment mark (column 3, lines 4 ~ 7).

11. Claims 1 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over Baba in view of Schwartz et al.

Note Fig. 2 of Baba, where the reference shows a semiconductor device comprising: a semiconductor element (1) having a plurality of electrodes (2); a redistribution layer (15) which connects the electrodes of the semiconductor device to electrode pads (12) located in predetermined positions of the redistribution layer (see Fig. 2); a plurality of metal posts (11) formed on the electrode pads (12) of the redistribution layer (15), the metal posts (11) being configured to be provided with external connection electrodes (see Fig. 2) except at least one mark member which serves as an alignment mark located in a predetermined positional relationship with the metal posts, wherein the mark member is made of the same material as the

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metal posts. However, Schwartz et al. discloses at least one mark member (c in Fig. 6), which serves as an alignment mark on a bump or pad. Thus, it would have been obvious to one of ordinary skill in the art at the time when the invention was made to modify Baba by adding an alignment mark on the metal post so that at least one metal post, which serves as a mark member located in a predetermined positional relationship with other metal posts as taught by Schwartz et al. The ordinary artisan would have been motivated to modify Baba in the manner described above for at least the purpose of increasing speed to find correct position (column 6, lines 34 ~ 54).

Regarding claim 4, note Fig. 2 of Baba, where the reference shows a semiconductor device comprising: a semiconductor element (1) having a plurality of electrodes (2); a redistribution layer (15) which connects the electrodes (2) of the semiconductor device to electrode pads (12) located in predetermined positions of the redistribution layer (see Fig. 2) except at least one mark member which serves as an alignment mark located in a predetermined positional relationship with the electrode pads, wherein the mark member is made of the same material with the electrode pads. However, Schwartz et al. discloses at least one mark member (c in Fig. 6), which serves as an alignment mark on a bump or pad. Thus, it would have been obvious to one of ordinary skill in the art at the time when the invention was made to modify Baba by adding an alignment mark on the pad so that at least one pad, which serves as a mark member located in a predetermined positional relationship with other electrode pads as taught by Schwartz et al. The ordinary artisan would have been motivated to modify Baba in the manner described above for at least the purpose of increasing speed to find correct position (column 6, lines 34 ~ 54).

Conclusion

12. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Razon et al. and Takagi disclose a chip scale package.

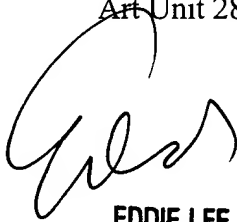
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chris C. Chu whose telephone number is (703) 305-6194. The examiner can normally be reached on M-F (10:30 - 7:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eddie C. Lee can be reached on (703) 308-1690. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 308-7382 for regular communications and (703) 308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

Chris C. Chu
Examiner
Art Unit 2815

c.c.
September 18, 2001



EDDIE LEE
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800